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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte CIRO ANGEL SOTO, SUJITH RAPOLU, OLEG YURIEVITCH GUSIKHIN, PERRY ROBINSON MACNEILLE, DAVID RICHENS BRIGHAM, POYU TSOU, MARK JOHN JENNINGS, and YAN MENG

Appeal 2017-005179
Application 14/097,334[1]
Technology Center 3600

Before EDWARD A. BROWN, GEORGE R. HOSKINS, and FREDERICK C. LANEY, *Administrative Patent Judges*.

LANEY, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Ciro Angel Soto et al. ("Appellants") appeal under 35 U.S.C. § 134(a) from the Examiner's decision (dated May 2, 2016, hereafter "Final Act.") rejecting claims 1, 8, 14, and 15.[2] We have jurisdiction over this appeal under 35 U.S.C. § 6(b).

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[1] According to Appellants' Appeal Brief (hereafter "Appeal Br."), filed August 29, 2016, Ford Global Technologies, LLC is the real party in interest. Appeal Br. 2.

[2] Claims 7 and 20 have been canceled and claims 2–6, 9–13, and 16–19 have been withdrawn. *See* Appeal Br. (Claims App., pp. 1–4).

We AFFIRM.

INVENTION

Appellants' invention "generally relate[s] to a method and apparatus for predicting electric vehicle energy consumption." Spec. ¶ 1.

Claims 1, 8, and 15 are independent. Claim 1 is illustrative of the claimed invention and reads as follows:

> 1. A system comprising:
> a processor configured to:
> receive power-usage-affecting variables, including acceleration and corresponding current and projected values over a route;
> break the route into segments;
> for each segment, lookup, based at least on acceleration, a predetermined power usage estimate; and
> present total estimated power usage over the route based on accumulated power usage estimates for each segment.

REJECTIONS

I. The Examiner rejected claims 1, 8, 14, and 15 under 35 U.S.C. § 101 as directed to patent-ineligible subject matter.[3]

II. The Examiner rejected claim 1 under 35 U.S.C. § 103(a) as being unpatentable over Vavrus (US 7,783,417 B2, iss. Aug. 24, 2010).

III. The Examiner rejected claims 8, 14, and 15 under 35 U.S.C. § 103(a) as being unpatentable over Luke (US 2013/0030630 A1, pub. Jan. 31, 2013) and Vavrus.

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[3] The Examiner also identifies claim 7 in the rejection, but this appears to be a typographical error because it had been canceled previously. Final Act. 2; Ans. 2. Therefore, we do not consider claim 7 to be subject to this rejection.

ANALYSIS

Rejection I – Patent-Ineligible Subject Matter

The Examiner determines claims 1, 8, 14, and 15 are "directed to a judicial exception (i.e., a law of nature, a natural phenomenon, or an abstract idea) without significantly more." Final Act. 6. Appellants dispute this conclusion because, for example, the invention "creates an improvement in vehicle power usage, by providing a method whereby power usage can be more accurately estimated for a route and then recommending acceleration thresholds which help ensure the vehicle does not run out of power before completing the route." Appeal Br. 11–12. In this appeal, the claims are addressed collectively as Appellants neither argue for the eligibility of any claim separate from the other claims nor present any meaningful arguments for the distinctive significance of any claim limitation other than those shared by all of the claims.

Section 101 of the Patent Act defines patent-eligible subject matter: "Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title." 35 U.S.C. § 101. In interpreting this statutory provision, the Supreme Court has held that its broad language is subject to an implicit exception for "laws of nature, natural phenomena, and abstract ideas," which are not patentable. *Alice Corp. Pty. Ltd. v. CLS Bank Int'l*, 134 S. Ct. 2347, 2355 (2014).

The Supreme Court has set forth "a framework for distinguishing patents that claim laws of nature, natural phenomena, and abstract ideas from those that claim patent-eligible applications of those concepts." *Alice*, 134 S. Ct. at 2355 (citing *Mayo Collaborative Servs. v. Prometheus Labs, Inc.*, 566 U.S. 66, 71–72 (2012)). According to the Supreme Court's framework, we must first determine whether the claims at issue are directed to one of those concepts (i.e., laws of nature, natural phenomena, and abstract ideas). *Id.* If so, we must secondly "consider the elements of each claim both individually and 'as an ordered combination' to determine whether the additional elements 'transform the nature of the claim' into a patent-eligible application." *Id.* The Supreme Court characterizes the second step of the analysis as "a search for an 'inventive concept' — *i.e.*, an element or combination of elements that is 'sufficient to ensure that the patent in practice amounts to significantly more than a patent upon the [ineligible concept] itself.'" *Id.*

The Examiner finds *Electric Power Group v. Alstom S.A.*, 830 F.3d 1350 (Fed. Cir. 2016), applying the above framework, to be instructive. Ans. 3–5. We agree. The patents in that case "describe and claim systems and methods for performing real-time performance monitoring of an electric power grid by collecting data from multiple data sources, analyzing the data, and displaying the results." *Electric Power Group*, 830 F.3d at 1351.

Applying the first prong of the framework for considering patent eligibility, the Federal Circuit observed that its precedent has "treated collecting information, including when limited to particular content (which does not change its character as information), as within the realm of abstract

ideas." *Id.* at 1353. Moreover, "analyzing information by steps people go through in their minds, or by mathematical algorithms" have also been treated "as essentially mental processes within the abstract-idea category." *Id.* at 1354. Because the claims focused on processing information itself and the use of a computer merely as a tool to improve that process, the Federal Circuit held the claims were properly characterized as being directed to an abstract idea rather than to an improvement of computer functionality. *Id.*

Evaluating the second prong of the patent eligibility framework, the Federal Circuit held, "merely selecting information, by content or source, for collection, analysis, and display does nothing significant to differentiate a process from ordinary mental processes, whose implicit exclusion from § 101 undergirds the information-based category of abstract ideas." *Id.* at 1355. The Federal Circuit focused more acutely on the claim language for this prong and noted that no new data was generated because it did not require a new source or type of information, or new techniques for analyzing it, nor did the claim language invoke any inventive programming. *Id.* "Merely requiring the selection and manipulation of information . . . by itself does not transform the otherwise-abstract processes of information collection and analysis." *Id.* Lastly, looking at *how* the claims achieved the desired results, the Court found nothing transformative because they only used conventional, generic computer technology. *Id.* at 1355–56.

The Examiner notes that the claims "recite, in part, 'a system,' 'a computer implemented method' and 'a non-transitory computer readable storage medium . . . to perform a method' for 'receiving power-usage-affecting variables . . . and corresponding current and projected values,'

looking up 'a predetermined power usage estimate' and 'presenting total estimated power usage.'" Ans. 4. The Examiner finds "[a]ll of these concepts relate to monitoring and analyzing data from disparate sources." *Id.* Similar to the claims in *Electric Power Group*, the Examiner determines "the present pending application [is] directed towards collecting information, analyzing it and presenting results." *Id.* at 4–5. The Examiner concludes the description "of comparing new and stored information and using rules to identify options [in the claims] is an abstract idea." *Id.* at 4.

Appellants "wonder[] how the preceding could be remotely said to encompass an 'abstract idea'" because the claims describe technology that improves vehicle power usage, "by providing a method whereby power usage can be more accurately estimated for a route and then recommending acceleration thresholds which help ensure the vehicle does not run out of power before completing the route." Appeal Br. 11–12. A claim that focuses on processing information and using a computer as merely a tool to improve that process, however, is an abstract idea rather than an improvement of computer functionality. *Electric Power Group*, 830 F.3d at 1354. Appellants' claims simply describe the use of a processor or computer to perform computations, which is conventional computer activity that is not patent eligible. *See Two-Way Media Ltd. v. Comcast Cable Comm., LLC*, 874 F.3d 1329, 1337 (Fed. Cir. 2017).

Appellants argue, "[t]he 'computer as a tool' argument only applies when the Applicant is claiming an otherwise fundamental or longstanding practice, and then merely computerizes it," but they provide no authority for this position. Reply Br. 3. We do not agree it accurately reflects Federal

Circuit precedent, which holds novel steps recited in the claims, standing alone, is not sufficient to confer patent eligibility. *Affinity Labs of Texas, LLC v. DIRECTV, LLC*, 838 F.3d 1253, 1263 (Fed. Cir. 2016) (holding that even if the claims recite novel subject matter, "it does not avoid the problem of abstractness"). Regardless of novelty or obviousness, "[c]laims directed to generalized steps to be performed on a computer using *conventional computer activity* are not patent eligible." *Two-Way Media Ltd.*, 874 F.3d at 1337 (emphasis added). In this case, the claims broadly recite conventional computer activity to perform generally described steps for processing specific data to get additional data. Even if the steps are novel, they are still for processing information itself to derive further information, which is an abstract idea.

Because the Examiner's determination that the claims are directed to an abstract idea was not improper, we turn to whether the claims otherwise include something that transforms them into a patent-eligible application of the abstract idea. The Examiner finds the claims do not "include additional elements that are sufficient to amount to significantly more than the judicial exception because the recitation of 'computer-implemented' and by 'a processor' is akin to adding the words 'apply it' in conjunction with the abstract idea." Final Act. 6. "Generic computer components recited as performing generic computer functions that are well-understood, routine and conventional activities amount to no more than implementing the abstract idea with a computerized system." Ans. 5. Looking at the recited claim elements, the Examiner finds "no indication that the combination of elements improves the functioning of a computer or improves another

technology or technical field." *Id.* Instead, "[t]heir collective functions merely provide [a] conventional computer implementation [the abstract idea] (i.e. mere instructions to implement the abstract idea on a generic computing system)." *Id.*

Appellants contend the Examiner is mistaken because "[t]he claims *do* provide an inventive means of achieving the result (display of estimated total power usage)." Reply. Br. 2. In Appellants' words, "[t]he claims specifically recite receiving acceleration (including current and projected acceleration), breaking a route into segments, obtaining a power usage estimate for each segment based on the acceleration data and aggregating the obtained data to provide the total usage result." *Id.* The claims in this case are distinguishable from those in *Electric Power Group*, Appellants argue, because "there is a clear, atypical method that improves the field of providing estimated power usage by tying estimated power usage over a plurality of route segments, based on acceleration data." *Id.* "[T]he 'something more' test is clearly met when a claim recites a novel and uncommon (i.e., not fundamental or commonly used) method for obtaining a result," Appellants assert. *Id.* Appellants' contentions are not persuasive, however.

We disagree first that showing a novel and uncommon method for obtaining a result necessarily satisfies the second prong of the patent-eligible subject matter test. Instead, current Federal Circuit precedent establishes, in cases such as this, that the focus is on *how* the desired result is achieved and whether the claims "require[] anything other than conventional computer . . . components operating according to their ordinary functions," irrespective of

any novelty afforded *to the information* generated. *Two-Way Media Ltd.*, 874 F.3d at 1339. Thus, even if Appellants are correct the claims describe a novel approach for providing power usage information, Appellants still must demonstrate how the claims provide this information using anything other than conventional computer activity (i.e., collecting information, analyzing it, and providing results of the collection and analysis). *See Affinity Labs of Texas*, 838 F.3d at 1263. Appellants have not made such a showing. Appellants' characterization of the claims – "receiving acceleration [data], breaking a route into segments, obtaining a power usage estimate for each segment based on the acceleration data and aggregating the obtained data to provide the total usage result" (Reply Br. 2) – is a description of results that a processor is configured to provide. Appellants do not suggest these results are generated using anything other than conventional computer activity (i.e., collecting information, analyzing it, and providing results of the collection and analysis). We agree with the Examiner that the claims are general instructions to implement an abstract idea on a generic computer system (Ans. 5), which do nothing significant to differentiate the claimed subject matter from ordinary mental processes, whose implicit exclusion from § 101 undergirds the information-based category of abstract ideas.

As a result, Appellants have not shown persuasively any errors with the Examiner's determination claims 1, 8, 14, and 15 are patent-ineligible and, therefore, we sustain the Examiner's rejection of these claims.

Rejection II – Obviousness of Claim 1

The Examiner finds Vavrus discloses, "a processor configured to: receive power-usage-affecting variables (64 and/or 70), including acceleration, and corresponding current and projected values (68) over a route (60)." Final Act. 6–7 (citing Vavrus col. 4, ll. 23–32, col. 6, ll. 15–18, Figs. 2, 3, 5). Because Vavrus identifies "whether the user 20 accelerates fast" as relevant driver behavior data, the Examiner finds it "clearly discloses that the acceleration is collected as part of the actual driver behavior data." Ans. 7 (quoting Vavrus col. 4, ll. 40–45). Appellants argue that the Examiner misapprehends what Vavrus discloses regarding the collection and use of acceleration data as a power-usage-affecting variable. Appeal Br. 12–13.

After considering the Vavrus disclosure, we are persuaded a preponderance of the evidence does not support the Examiner's finding it discloses a processor that is configured to receive power-usage-affecting variables that include *projected values over a route for acceleration*. Although Vavrus discloses a processor configuration that receives acceleration data to evaluate whether the operator uses more fuel in a stop than a typical driver (*see* Vavrus col. 4, ll. 40–45), this is not persuasive evidence of a configuration in which the processor receives *projected acceleration values over a route*. Furthermore, element 68 in Figure 2 of Vavrus, which the Examiner identifies as disclosing "projected values" for acceleration over a route, relates to "Real-time Route Information Data." Vavrus Fig. 2. None of the evidence the Examiner identifies from Vavrus suggests persuasively the processor receives information about projected

acceleration values over a route. Therefore, we do not sustain the Examiner's rejection of claim 1 as being unpatentable over Vavrus.

Rejection III – Obviousness of Claims 8, 14, and 15

The Examiner's obviousness determination of claims 8, 14, and 15 relies on the combination of Luke and Vavrus, with Vavrus being cited solely to show it was a known technique to break the routes into segments when estimating power usage. Final Act. 7–9 (citing Luke paras. 90–94). Appellants challenge the sufficiency of these references as support for the Examiner's conclusion.

For claim 8, Appellants argue the rejection is deficient because "Luke never decides if total power usage exceeds remaining power" and because Luke does not suggest *recommending* a maximum acceleration limit. Appeal Br. 13–14. Claim 14 is allowable, according to Appellants, because of its dependency from claim 8. *Id.* at 14. Appellants do not separately argue the patentability of claim 14.

The Examiner characterizes Appellants' arguments for claim 8 as "appear[ing] to be arguing that the distance traveled and the remaining range have no relationship to the power usage and the remaining power." Ans. 8. In response, the Examiner reasons that,

> [i]n order for the comparison of the power usage to remaining power to even be useful an estimated range of the remaining power must be calculated, otherwise just saying that a battery has X amount of power left is meaningless unless one can determine what range that power can be translated into.

Id. We find the Examiner's reasoning persuasive. A preponderance of the evidence supports the Examiner's finding that Luke shows a skilled artisan

at the time of the invention knew to limit acceleration to conserve power to complete a route, "if total estimated power usage over the route, based on aggregated segment power usage estimates, exceeds remaining power," as recited in claim 8.

Additionally, addressing whether Luke *recommends* a maximum acceleration limit, the Examiner clarifies that Luke satisfies this limitation when the system presents the limit acceleration command to at least a vehicle controller to implement a restriction on the prime mover acceleration. *Id.* Appellants respond that Luke teaches actually taking an action (i.e., limiting acceleration) rather than making a recommendation. Reply Br. 7. However, Appellants fail to address the Examiner's position that, prior to any limiting action, the system first suggest a course of action (i.e., a limit acceleration command) to the controller, which may or may not take further action (i.e., the control may or may not execute the command because of other considerations). Consistent with the Examiner's position, we note that in Figure 5 of Luke the controller may stop (or not implement) the operational limit if it has been overridden, which is indicative of the fact that the limitation is a recommendation (i.e., a suggested course of action). *See also* Luke ¶ 95.

Because Appellants' arguments do not persuasively demonstrate an error with the Examiner's obviousness determination of claim 8, we sustain the rejection of claims 8 and 14.

For claim 15, Appellants contend the rejection is deficient because Luke does not disclose, "determining an acceleration limit, based on a lookup table including a plurality of power-usage-affecting variables other

than acceleration." *Id.* Appellants' argument is persuasive. While Luke does teach limiting acceleration based on various conditions, a preponderance of the evidence does not support the Examiner's finding that Luke determines an acceleration limit, *based on a lookup table* including a plurality of power-usage-affecting variables other than acceleration. The Examiner states, "that using a lookup table, as taught in Vavrus, in the determination of Luke would have been well within the bounds of a person or ordinary skill in the art." Ans. 9. Although a skilled artisan may have had the ability to do what is claimed, the Examiner has not demonstrated that a skilled artisan would have known to use a lookup table including a plurality of power-usage-affecting variables to determine the acceleration limit. Paragraphs 90–94 of Luke teach generally that limiting acceleration is an option available for extending the estimated range, but do not suggest the acceleration limit is determined by using a lookup table that includes power-usage-affecting variables for the route. Therefore, because the Examiner's obviousness determination is flawed, we do not sustain the rejection of claim 15.

DECISION

The Examiner's rejection of claims 1, 8, 14, and 15 under 35 U.S.C. § 101 as directed to patent-ineligible subject matter is affirmed.

The Examiner's unpatentability rejections of claims 1 and 15 under 35 U.S.C. § 103(a) are reversed.

The Examiner's unpatentability rejections of claims 8 and 14 under 35 U.S.C. § 103(a) are affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED